UNIVERSITY of CALIFORNIA, SAN DIEGO
MEDICAL CENTER EMERGENCY MEDICINE

Serum Troponin I Measurement of Subjects Exposed to the Taser X-26®

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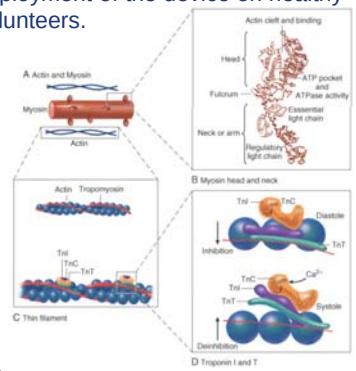
Introduction:. The Taser® is a weapon that delivers high-voltage, low amperage electricity in a pulsed waveform and is representative of the group of less lethal weapons known as "CED's" (conducted energy devices). Although generally regarded as safe, little research exists in the literature despite reported sudden deaths associated with CED use.

Objectives: Through prior study we noted no change in cardiac rhythm of human subjects during a brief Taser X-26® activation. In the present study, we hypothesized that the Taser X-26® discharge would not result in myocardial injury as measured by a rise in the troponin I cardiac enzyme after deployment of the device on healthy volunteers.



Zipes: Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine, 7th ed., Copyright © 2005 Saunders, An Imprint of Elsevier

Methods: This prospective cohort study was performed with law enforcement personnel receiving training on the Taser X-26®. The voluntary subjects had a single serum troponin I measured 6 hours after each received a Taser X-26® five second discharge as part of their training. The primary endpoint was development of a positive troponin I (>0.2ng/ml). Descriptive statistics were used, calculated using a computerized statistics program (STATA). Human Subjects approval was obtained.

Results: : A total of 66 subjects volunteered and underwent a Taser X-26® shock delivery. The mean duration of discharge received was 4.36 seconds, range 1.2-5 seconds. All subjects had a blood draw 6 hours after receiving the shock. **Troponin I values for all subjects were <0.2ng/ml**, with a positive assay defined as >0.2ng/ml. (95% CI 0-0.054)

Limitations: The duration of shock delivered was short and consisted of a single shock. The device is sometimes deployed for longer periods during actual use. Also, the location of probes was across the back and not the chest, possibly reducing the potential for current across the chest. Our subjects were not under the influence of drugs or in a state of agitated delirium.

Conclusions: Though limited by short shock duration, human volunteers exposed to a single shock from the Taser® did not develop abnormal serum troponin I level 6 hours after shock, suggesting there was no myocardial necrosis.

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